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ANATOMICAL NOTES ON TODUS, OXYRUNCUS AND SPINDALIS.

BY HUBERT LYMAN CLARK.

DURING a recent visit to Cuba, Dr. Thomas Barbour was so kind as to secure alcoholic specimens of *Todus* and *Spindalis* for my study and I am glad to express here my thanks for his thoughtfulness. Mr. Ridgway has very kindly entrusted to me the remains of a specimen of *Oxyruncus* which he collected in Costa Rica and I have to thank him and Dr. Richmond for giving me the opportunity of examining this interesting bird.

TODUS.

The anatomical characteristics of this genus have been so fully worked out by Murie (1872, Proc. Zool. Soc. London, p. 664) and Forbes (1882, Proc. Zool. Soc. London, p. 442) that there would seem to be very little to add to their accounts. But the former confined his studies to the skeleton while the latter deals with the pterylosis so briefly that a few more details may well be mentioned. Forbes has called attention to the very short intestine in *Todus*; in the specimen before me from Cuba, it is about 70 mm. long or just about equal to the length of the bird without its tail feathers. The arrangement of the loops of the intestine is strikingly like that of *Alauda* as figured by Gadow (1879, Jena. Zeits., vol. 13, pl. XI, figs. 8 and 11) except that the loop 4-7 is not nearly as long. In this respect it resembles the arrangement in *Cypselus* (l. c., Pl. X, fig. 10), to which it is very similar.

Nitzsch's account (1840, Syst. der Pteryl. p. 127, pl. IV, figs. 9 and 10) of the pterylosis of *Todus* is unfortunately not very accurate. Forbes suggests that this was probably due to his observations being based on the study of skins. While this is no doubt true, it is also due in part to his inclusion of *Todirostrum cinereum* (L.) with *Todus viridis* L. in the genus *Todus*. It is hardly strange that the study of the skins of two birds belonging to

different orders, under the impression that they were congeneric, should lead to mistakes in describing the pterylosis of the genus! Forbes has pointed out that the sternal tracts are not remarkable, as they are figured by Nitzsch, but are quite like those of many Passerine birds, broad, undivided but abruptly contracted where they pass into the very narrow ventrals. The connection between the sternals and the humerals over the base of the wing is however unusually well feathered and this, no doubt, has led to one of the errors in Nitzsch's figure 9. Nitzsch says there are 19 remiges which Forbes corrects to 20, but the specimen at hand shows 21 very clearly, there being 11 secondaries in each wing. In the pterylosis of the head, there are certain peculiarities which neither Nitzsch nor Forbes mention but which are of some importance nevertheless. The back of the head is very sparsely feathered but about the middle of the neck the upper cervical tract begins abruptly and is densely feathered. The frontal tract is thickly feathered and is sharply limited on each side by a conspicuous supraocular apterium. The lower cervical tract continues clear to the gonys as a narrow, thickly-feathered strip bounded on each side by a prominent apterium along each ramus of the lower jaw. In all these three features, there is a noticeable resemblance to the pterylosis of *Alcedo*.

In the specimen before me, which is an adult *Todus multicolor* Gould, from Cojimar, Havana Province, Cuba, there is an interesting peculiarity, which calls for special comment. There are only eight rectrices and, while examination shows that one of the middle pair and one of the outside pair have been accidentally lost, it is clear that this bird never had but *ten*. Nitzsch gives the number of rectrices in *Todus* as twelve and all later writers have followed him. Through the kindness of Mr. Bangs, I have examined a number of skins of *Todus* from Cuba, Jamaica, Hayti and Porto Rico and in every case there are twelve rectrices. It seems then that this specimen which Dr. Barbour collected in Cuba is an individual variant, which in view of the peculiarities of the little family to which it belongs, is of more than ordinary interest.

OXYRUNCUS.

The only material of this rare bird available for study is the skinned carcase, minus head, limbs and intestines, of a specimen shot by Mr. Ridgway, April 7, 1905, at Bouilla, Costa Rica. The carcase has at some time been partially dried so that the muscles permitted of no careful dissection, and my observations are therefore confined to the tongue (which remains attached to the wind-pipe), the syrinx, the heart, the sternum, the backbone and the sacrum. In none of these parts, did I find a characteristic feature, but instead a striking resemblance to *Sayornis* and *Tyrannus* is evident in all. The tongue and syrinx are so much like those of *Sayornis* that the only difference noted is that the tongue is a little more horny than in the *Phœbe* and its posterior lobes have distinctly fewer and much smaller, sharp marginal papillæ. The heart is noticeably large, much larger than that of a Kingbird. It measures about 16 mm. in length by 9 mm. in thickness, while the Kingbird's is about 14 by $7\frac{1}{2}$ mm. The sternum is almost exactly like that of *Sayornis*, only it is larger and the manubrium is longer, more deeply forked and hence more conspicuous. The scapulæ are a little longer, more pointed and more curved than in *Sayornis*, but the differences are very trifling. The coracoids are stout and the procoracoids are very conspicuous as in *Tyrannus*. The vertebral column is like that of *Tyrannus* in the number of its component parts but the first of the seven pairs of ribs are long and slender as in *Sayornis*. The sacrum is noticeably larger and its vertebral components more fully ossified than in *Tyrannus*, so that the sacra of the two genera can be easily distinguished, but none of the differences are important. Indeed, it must be said that so far as the internal structures which I have examined are concerned, there is no reason why *Oxyruncus* should be separated from the *Tyrannidæ*.

Mr. Bangs has kindly permitted me to examine the skins of an adult male *Oxyruncus cristatus* (Swains.) from Brazil and of three females of *O. c. frater* (Scl. & Sal.) from Costa Rica. The male shows the peculiar modification of the outer web of the first (tenth) primary perfectly developed, while it is entirely lacking in the three

females. Mr. Ridgway (1907, Bull. U. S. Nat. Mus., No. 50, p. 332) considers the character as really not worth consideration, the serration being so faint as to be practically non-existent." Again on p. 333 (footnote) he says the character is "very indistinct in all specimens examined" and yet on p. 334 (footnote) he says that it is "very obvious in a specimen sexed by the collector as a female." It seems to me that Mr. Ridgway has been misled by the mistake of this collector who apparently sexed a male as female. Such mistakes are not rare, most collectors having probably made them at some time, and it is easier for me to believe that such a mistake has occurred in this case, than to question the importance of this striking character. It is well known that in several genera of Pipridæ, the male possesses peculiar modifications of the wing feathers as a secondary sexual character and it is probable that in *Oxyruncus* the serration of the tenth primary on its outer web is of a similar nature. More material would seem to be necessary before the question can be definitely settled.

SPINDALIS.

Dr. Barbour collected at Guantanamo, Cuba, a fine pair, male and female, of *Spindalis pretrei* (Lesson) which I have examined with much interest. The general pterylosis is notable only in that the dorsal tract does not have the rhomboidal form usual among Passeres but is narrowly elliptical as Nitzsch figures it in *Oriolus*. The other tracts show no special peculiarities. The wing is somewhat rounded, the sixth, seventh and eighth primaries being rather short and subequal, with the ninth and fifth still shorter. There are of course nine primaries and nine secondaries. The twelve rectrices are approximately equal, though the outer ones are really the longest. The bony palate is notable chiefly for the very long and slender palatine processes. There is no trace of a secondary palatine process such as occurs in *Zamelodia*. The alimentary canal is characterized by a rather short and unusually large intestine. The stomach is small, less than 10 mm. long, and there is no crop, though the basal part of the œsophagus is somewhat enlarged. The intestine is only about 90 mm. long, but is about

3 mm. in diameter and there is little difference in size between the small intestine and the rectum. The intestinal loops are naturally few and simply arranged as in many Passerine birds; there is nothing distinctive in their arrangement.

Examination of the sternum revealed the interesting fact that it is like that of any finch, the only peculiarity being in the manubrium which is very large with the two arms or divisions long and widely spreading. There is no trace of an "osseous bridge" from the anterior margin of the sternum to the manubrium such as occurs in *Piranga*, nor is there any bony roof, either with or without foramina, covering a space back of the anterior margin, such as occurs in *Saltator*, *Pipilo* et al. There are no differences to be seen between the sternum of the male in *Spindalis* and that of the female. The absence of the "osseous bridge" in this genus indicates either that its presence is not characteristic of all tanagers or else that *Spindalis* is not a tanager.

THE NEST LIFE OF THE SPARROW HAWK.

BY ALTHEA R. SHERMAN.

THE nesting of a species new to our place always is an event of great interest, and doubly so when the birds are of the hole-nesting sort, whose home life at very close range has never been exhibited (so far as is known) to mortal eye; but when the species is one of the *Raptores* interest heightens and feelings become indescribably mixed; there is the anxiety to watch the nest life mingled with fear for our harmless, little feathered friends, that trustingly have returned to their summer home; hence on April 4, 1912, it was with a perturbed mind that a pair of Sparrow Hawks (*Falco sparverius sparverius*) that had arrived the day before, were watched while they inspected the nest box occupied by Screech Owls two years previously.

Never before in our immediate neighborhood—National, Iowa—